WHAT IS CLAIMED IS:

1. A pedestrian route guidance apparatus, comprising:

a database configured to store map data including road network data and landmark data;

a route search unit configured to search for a route from a departure point to a destination point from the road network data stored in said database;

a road pattern analysis unit configured to analyze a route pattern of the route by referring to the road network data, and to obtain road pattern data as the analysis result;

a landmark selection area decision unit configured to determine a landmark selection area for route guidance along the route based on the road network data and the road pattern data;

a landmark selection unit configured to select landmark data included in the landmark selection area from said database;

a route guidance information generation unit configured to generate route guidance information of the route using the road pattern data and the landmark data selected by said landmark selection unit; and

a presentation unit configured to present the

route guidance information.

2. The route guidance apparatus according to claim 1,

wherein the road network data includes a plurality of nodes and a plurality of arcs each connecting two nodes,

wherein node data of each node including a node identifier, a node position, a node name, the number of arcs connecting the node, and an arrangement of arc identifiers connecting the node, and

wherein arc data of each arc including an arc identifier, positions of starting point and end point of the arc, an arc name, and an arc width.

3. The route guidance apparatus according to claim 2,

wherein the landmark data includes a landmark identifier, a landmark name, a class of the landmark, a priority degree, and a position of the landmark.

4. The route guidance apparatus according to claim 1,

further comprising an input unit configured to input the departure point and the destination point by a user.

5. The route guidance apparatus according to claim 1,

wherein said road pattern analysis unit analyzes a junction pattern along the route as the road pattern.

6. The route guidance apparatus according to claim 5,

wherein said road pattern analysis unit counts the number of roads connected to the junction and measures each angle difference between a predetermined road and another road.

7. The route guidance apparatus according to claim 6,

wherein said road pattern analysis unit measures a first angle difference between an entering road connected to the junction and an advancing road connected from the junction, a second angle difference between the entering road and another road connected from the junction if the junction is a forked road or three-forked road, and a third angle difference between the entering road and anoth r road connected from the junction if th junction is a three-forked road.

8. The route guidance apparatus according to claim 7,

wherein said road pattern analysis unit includes a decision dictionary configured to store expressions of route guidance in correspondence with relation of the first angle difference, the second angle difference and the third angle difference for the number of routes, the expression of route guidance represents for a pedestrian how to advance the junction.

9. The route guidance apparatus according to claim 1,

wherein said landmark selection area decision unit determines the landmark selection area based on geometrical information of the route and the road pattern data.

10. The route guidance apparatus according to claim 9,

wherein said landmark selection area decision unit determines area facing a plurality of roads connected to the junction as the landmark selection area.

11.   The route guidance apparatus according to claim 1,

wherein said landmark selection area decision unit determines a circular area having a center at a junction point, a radius of the circular area being calculated by a function including width of each road forming the junction.

12.   The route guidance apparatus according to claim 11,

wherein said landmark selection area decision unit divides the circular area into a plurality of selection areas by each road connected to the junction.

13.   The route guidance apparatus according to claim 12,

wherein said landmark selection area decision unit assigns a priority degree to each of the plurality of selection areas by referring to the junction pattern analyzed by said road pattern analysis unit.

14.   The route guidance apparatus according to claim 13,

wherein said landmark selection area decision

unit assigns the highest priority degree to one selection area inside a turn at the junction if the advance direction turns at the junction from the entering direction.

15. The route guidance apparatus according to claim 14,

wherein said landmark selection area decision unit assigns the lowest priority degree to another selection area of outside the turn.

16. The route guidance apparatus according to claim 15,

wherein said landmark selection unit selects a landmark included in the landmark selection area based on the priority degree of the landmark selection area, the priority degree of each landmark, and a distance from the route to each landmark.

17. The route guidance apparatus according to claim 16,

wherein the distance includes a perpendicular distance from the entering route to the landmark, a perpendicular distance from the advancing route to the landmark, and a distance from the junction point to the landmark if the landmark selection area faces

the entering direction and the advance direction at the junction.

18. The route guidance apparatus according to claim 8,

wherein said database previously stores a plurality of expression models as a route guidance sentence pattern each corresponding to the expression of route guidance of each road pattern in the decision dictionary.

19. The route guidance apparatus according to claim 18,

wherein said route guidance information generation unit selects the expression model corresponding to the road pattern data obtained by said road pattern analysis unit from said database.

20. The route guidance apparatus according to claim 19,

wherein said route guidance information generation unit adds at least one of a landmark name, a junction name, and a turn direction to the selected expression model in order to generate a route guidance sentence.

21.   A pedestrian route guidance method,
comprising:

storing map data including road network data
and landmark data in a database;

searching for a route from a departure point to
a destination point from the road network data
stored in the database;

analyzing a route pattern of the route by
referring to the road network data;

obtaining road pattern data as the analysis
result;

determining a landmark selection area for route
guidance along the route based on the road network
data and the road pattern data;

selecting landmark data included in the
landmark selection area from the database;

generating route guidance information of the
route using the road pattern data and the selected
landmark data; and

presenting the route guidance information.

22.   A computer program product, comprising:

a computer readable program code embodied in
said product for causing a computer to execute
pedestrian route guidance, said computer readable
program code having:

a first program code to store map data
including road network data and landmark data in a
database;

a second program code to search for a route
from a departure point to a destination point from
the road network data stored in the database;

a third program code to analyze a route
pattern of the route by referring to the road
network data;

a fourth program code to obtain road pattern
data as the analysis result;

a fifth program code to determine a landmark
selection area for route guidance along the route
based on the road network data and the road pattern
data;

a sixth program code to select landmark data
included in the landmark selection area from the
database;

a seventh program code to generate route
guidance information of the route using the road
pattern data and the selected landmark data; and

a eighth program code to present the route
guidance information.